

## **Equine Piroplasmosis**

### **Equine Babesiosis**

#### **Importance**

Equine piroplasmosis is a tick-borne protozoal infection of horses. Piroplasmosis may be difficult to diagnose, as it can cause variable and nonspecific clinical signs. The symptoms of this disease range from acute fever, inappetence, and malaise, to anemia and jaundice, sudden death, or chronic weight loss and poor exercise tolerance. The disease may be fatal in up to 20% of previously unexposed animals. The tick vectors exist in the United States, and epidemics of piroplasmosis were seen in Florida in the 1960s.

#### **Etiology**

Equine piroplasmosis results from infection by the protozoa *Babesia caballi* or *B. equi* (phylum Apicomplexa). The two organisms may infect an animal concurrently.

#### **Species affected**

Equine piroplasmosis affects horses, mules, donkeys and zebras. Zebras are an important reservoir for infection in Africa.

#### **Geographic distribution**

Equine piroplasmosis is NOT endemic in Australia, Canada, England, Ireland, Japan and the United States. Epidemics were reported in Florida in 1961 and 1965, but after a 10-year eradication campaign, the United States appears to be free of this disease. *Babesia equi* infections have also been reported from Australia, but this parasite does not seem to have become endemic there.

#### **Transmission**

*Babesia caballi* and *Babesia equi* are transmitted by adult and nymphal ticks. *B. caballi* is spread by ticks in the genera *Dermacentor*, *Hyalomma*, and *Rhipicephalus*. *Dermacentor nitens*, *D. albipictus*, and *D. variabilis* can transmit this protozoan in the laboratory. Transovarial transmission occurs.

*B. equi* also appears to be spread by ticks in the genera *Dermacentor*, *Hyalomma*, and *Rhipicephalus*. The vectors for this disease in the Western Hemisphere have not been identified. *B. equi* does not appear to be passed transovarially.

Equine piroplasmosis can also be spread by contaminated needles and syringes. Intrauterine infection of the foal is fairly common, particularly with *B. equi*. After recovery, horses may become carriers for long periods of time.

#### **Incubation period**

The incubation period for *B. equi* infections is 12 to 19 days, and infections are more severe. For *B. caballi* infections, it is 10 to 30 days.

## **Clinical signs**

The clinical signs of piroplasmosis are variable and often nonspecific. In rare peracute cases, animals may be found dead or dying. More often, piroplasmosis presents as an acute infection, with a fever, inappetence, malaise, labored breathing, congestion of the mucus membranes, and small, dry feces. Anemia, jaundice, hemoglobinuria, sweating, petechial hemorrhages on the conjunctiva, a swollen abdomen, and posterior weakness or swaying may be also seen. Subacute cases may have a fever (sometimes intermittent), inappetence, malaise, weight loss, signs of mild colic, and mild edema of the distal limbs. The mucus membranes can be pink, pale pink, or yellow, and may have petechiae or ecchymoses. In chronic cases, common symptoms include mild inappetence, poor exercise tolerance, weight loss, transient fevers, and an enlarged spleen (palpable on rectal examination). Foals infected *in utero* are usually weak at birth, and rapidly develop anemia and severe jaundice.

## **Post mortem lesions**

In acute cases, the animal is usually emaciated, jaundiced, and anemic. The liver is typically enlarged and dark orange-brown. The spleen is enlarged, and the kidneys are pale and flabby. Petechial hemorrhages may be seen in the kidneys and subepicardial and subendocardial hemorrhages in the heart. There may also be edema in the lungs and signs of pneumonia.

## **Morbidity and Mortality**

The mortality rate can be up to 20% in previously unexposed animals. In endemic regions, equine piroplasmosis can be treated with drugs; *B. equi* is usually less responsive to therapy than *B. caballi*. There is no vaccine.

## **Diagnosis**

### **Clinical**

Equine piroplasmosis should be suspected in horses with anemia, jaundice, and fever; however, the clinical signs are often variable and nonspecific.

### **Differential diagnosis**

The differential diagnosis for piroplasmosis includes surra, equine infectious anemia, dourine, African horse sickness, purpura hemorrhagica, and various plant and chemical toxicities.

### **Laboratory tests**

Equine piroplasmosis can be diagnosed by identification of the organisms in Giemsa stained blood or organ smears. *B. caballi* merozoites are joined at their posterior ends, while *B. equi* merozoites are often connected in a tetrad or “Maltese cross.” Organisms can often be found in acute infections, but may be very difficult to find in carrier animals. In carriers, thick blood films can sometimes be helpful.

Because *Babesia* organisms can be difficult to detect in carriers, serology is often the diagnostic method of choice. Serologic tests include complement fixation, indirect

fluorescent antibody (IFA), and enzyme-linked immunosorbent (ELISA) assays. The IFA test can distinguish between *B. equi* and *B. caballi*.

Other methods of diagnosis include DNA probes, *in vitro* culture, and the inoculation of a susceptible (preferably splenectomized) animal with blood from a suspected carrier. In addition, pathogen-free vector ticks can be fed on a suspect animal, and *Babesia* identified either in the tick or after the tick has transmitted the infection to a susceptible animal.

### **Samples to collect**

**Before collecting or sending any samples from animals with a suspected foreign animal disease, contact the AVIC. These samples should only be sent under secure conditions, by authorized personnel, and to authorized laboratories to prevent the spread of disease.**

Several thick and thin blood smears or an unclotted blood sample should be taken to detect *Babesia* organisms. If possible, blood samples should be collected during a rise in body temperature. Slides should be air-dried and fixed in methanol. Approximately 20 ml serum should also be taken for serology. For transmission tests to a susceptible horse, 500 ml uncoagulated blood (with antibiotics added) should be collected. Samples should be transported on wet ice or with frozen gel packs.

### **Recommended actions if equine piroplasmosis is suspected**

#### **Notification of authorities**

Equine piroplasmosis should be reported immediately to state or federal authorities.

Federal: Area Veterinarians in Charge (AVICS)

[http://www.aphis.usda.gov/vs/area\\_offices.htm](http://www.aphis.usda.gov/vs/area_offices.htm)

State vets: <http://www.aphis.usda.gov/vs/sregs/official.html>

#### **Quarantine and Disinfection**

Disinfectants and sanitation are not generally effective against the spread of tick-borne infections. However, preventing the transfer of blood from one animal to another is vital.

### **Public health**

*B. equi* has been implicated in human infections.

### **For More Information**

World Organization for Animal Health (OIE)

<http://www.oie.int>

OIE Manual of Standards

[http://www.oie.int/eng/normes/mmanual/a\\_summry.htm](http://www.oie.int/eng/normes/mmanual/a_summry.htm)

OIE International Animal Health Code

[http://www.oie.int/eng/normes/mcode/A\\_summry.htm](http://www.oie.int/eng/normes/mcode/A_summry.htm)

USAHA Foreign Animal Diseases book

[http://www.vet.uga.edu/vpp/gray\\_book/FAD/](http://www.vet.uga.edu/vpp/gray_book/FAD/)

Animal Health Australia. The National Animal Health Information System (NAHIS)  
<http://www.aahc.com.au/nahis/disease/dislist.asp>

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